## CLAIMS

What is claimed is:

1. A small-gauge, wide-angle illuminator, comprising:

a handpiece, optically coupled to receive a light beam from a light source;

an optical fiber, operably coupled to the handpiece, wherein the optical fiber receives the light beam from the light source;

an optical element, optically coupled to a distal end of the optical fiber, for receiving the light beam and scattering the light beam to illuminate a surgical field, wherein the optical element comprises a hemispherically shaped sapphire; and

a cannula, operably coupled to the handpiece, for housing and directing the optical fiber and the optical element.

2. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical element is a small-gauge optical element having a circular surface co-incident with an open aperture of the cannula, and a hemispherical surface facing the optical fiber.

3. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical element is a 19, 20 or 25 gauge optical element.

4. The small-gauge, wide-angle illuminator of Claim 1, wherein the cannula and the handpiece are fabricated from biocompatible materials.

5. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical fiber is optically coupled at the distal end to the optical element and at another end to an

optical cable, wherein the optical cable is operably coupled to the light source to transmit the light beam to the optical fiber, and wherein the optical cable comprises a first optical connector operably coupled to the light source and a second optical connector operably coupled to the handpiece.

6. The small-gauge, wide-angle illuminator of Claim 5, wherein the optical cable gauge and the optical fiber gauge are equal.

7. The small-gauge, wide-angle illuminator of Claim 5, wherein the optical cable comprises a plurality of optical fibers.

8. The small-gauge, wide-angle illuminator of Claim 5, wherein the first and second optical connectors are SMA optical fiber connectors.

9. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical fiber gauge and the optical element gauge are equal.

10. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical fiber is operably coupled to the handpiece to enable linear displacement of the optical fiber within the cannula.

11. The small-gauge, wide-angle illuminator of Claim 10, further comprising a means for adjusting the linear displacement of the optical fiber.

12. The small-gauge, wide-angle illuminator of Claim 11, wherein the means for adjusting comprises a push/pull mechanism.

13. The small-gauge, wide-angle illuminator of Claim 12, wherein adjusting the linear displacement causes the optical fiber to move away from or towards the optical element by an amount corresponding to the change in linear displacement.

14. The small-gauge, wide-angle illuminator of Claim 13, wherein the amount of linear displacement of the optical fiber determines an angle of illumination and an amount of illumination provided by the optical element to illuminate the surgical field.

15. The small-gauge, wide-angle illuminator of Claim 14, wherein the angle of illumination is between 20 and about 160 degrees.

16. The small-gauge, wide-angle illuminator of Claim 1, wherein the light beam comprises a beam of relatively incoherent light.

17. The small-gauge, wide-angle illuminator of Claim 1, wherein the light source is a xenon light source.

18. The small-gauge, wide-angle illuminator of Claim 1, wherein the optical element is about 2 millimeters long.

19. A small-gauge, wide-angle illumination surgical system comprising:

a light source for providing a light beam;

an optical cable, optically coupled to the light source for receiving and transmitting the light beam;

a handpiece, operably coupled to the optical cable to receive the light beam;

an optical fiber, operably coupled to the handpiece, wherein the optical fiber is optically coupled to the optical cable to receive and transmit the light beam;

an optical element, optically coupled to a distal end of the optical fiber, for receiving the light beam and scattering the light beam to illuminate a surgical field, wherein the optical element comprises a hemispherically shaped sapphire; and

a cannula, operably coupled to the handpiece, for housing and directing the optical fiber and the optical element.

20. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical element is a small-gauge optical element having a circular surface co-incident with an open aperture of the cannula, and a hemispherical surface facing the optical fiber.

21. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical element is a 19, 20 or 25 gauge optical element.

22. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the cannula and the handpiece are fabricated from biocompatible materials.

23. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical fiber is an integral part of the optical cable.

24. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical cable comprises a first optical connector operably coupled to the light source and a second optical connector operably coupled to the handpiece.

25. The small-gauge, wide-angle illumination surgical system of Claim 24, wherein the first and the second optical connectors are SMA optical fiber connectors.

26. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical cable gauge and the optical fiber gauge are equal.

27. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical cable comprises a plurality of optical fibers.

28. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical fiber gauge and the optical element gauge are equal.

29. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical fiber is operably coupled to the handpiece to enable linear displacement of the optical fiber within the cannula.

30. The small-gauge, wide-angle illumination surgical system of Claim 29, further comprising a means for adjusting the linear displacement of the optical fiber.

31. The small-gauge, wide-angle illumination surgical system of Claim 30, wherein the means for adjusting comprises a push/pull mechanism.

32. The small-gauge, wide-angle illumination surgical system of Claim 30, wherein adjusting the linear displacement causes the optical fiber to move away from or towards the optical element by an amount corresponding to the change in linear displacement.

33. The small-gauge, wide-angle illumination surgical system of Claim 32, wherein the amount of linear displacement of the optical fiber determines an angle of illumination and an amount of illumination provided by the optical element to illuminate the surgical field.

34. The small-gauge, wide-angle illumination surgical system of Claim 33, wherein the angle of illumination is between 20 and about 180 degrees.

35. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the light beam comprises a beam of relatively incoherent light.

36. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the light source is a xenon light source.

37. The small-gauge, wide-angle illumination surgical system of Claim 19, wherein the optical element is about 2 millimeters long.